

WHAT IS CLAIMED IS:

1. A 3D image processing apparatus comprising:
  - a storing unit configured to store data of a plurality of mask images corresponding to a plurality of projection directions associated with an object to be examined, and data of a plurality of contrast images corresponding to the plurality of projection directions associated with the object;
  - a subtracting unit configured to generate data of a plurality of subtraction images by subtracting the plurality of mask images from the plurality of contrast images;
  - a reconstruction unit configured to reconstruct first volume data from the plurality of mask images and reconstructs second volume data from the plurality of subtraction images;
  - an image processing unit configured to generate data of a first 3D image representing a bone structure and/or a soft tissue structure from the first volume data, and generates data of a second 3D image representing a contrasted blood vessel from the second volume data;
  - an image synthesizing unit configured to generate data of a synthetic image by synthesizing the first 3D image with the second 3D image; and
  - a displaying unit configured to display the synthetic image.

2. An apparatus according to claim 1, wherein the image synthesizing unit generates data of the synthetic image such that the second 3D image is displayed in a color different from that of the first 3D image.

5           3. An apparatus according to claim 1, wherein the image synthesizing unit assigns color information to the second 3D image independently of the first 3D image.

10           4. An apparatus according to claim 1, wherein the image processing unit generates the data of the first and second 3D images by volume rendering processing.

15           5. An apparatus according to claim 1, wherein the displaying unit singly displays the first 3D image or the second 3D image in place of the synthetic image in accordance with a user instruction.

20           6. A 3D image processing apparatus comprising:  
a storing unit configured to store data of a plurality of mask images corresponding to a plurality of projection directions associated with an object to be examined, and data of a plurality of contrast images corresponding to the plurality of projection directions associated with the object;

25           a reconstruction unit configured to reconstruct first volume data from the plurality of contrast images, and reconstructs second volume data from the plurality of mask images;

a subtracting unit configured to generate third

volume data by subtracting the second volume data from the first volume data;

an image processing unit configured to generate data of a first 3D image representing a bone structure and/or a soft tissue structure from the second volume data, and generates data of a second 3D image representing a contrasted blood vessel from the third volume data;

an image synthesizing unit configured to generate data of a synthetic image by synthesizing the first 3D image with the second 3D image; and

a displaying unit configured to display the synthetic image.

7. An apparatus according to claim 6, wherein the image synthesizing unit generates data of the synthetic image such that the second 3D image is displayed in a color different from that of the first 3D image.

8. An apparatus according to claim 6, wherein the image synthesizing unit assigns color information to the second 3D image independently of the first 3D image.

9. An apparatus according to claim 6, wherein the image processing unit generates the data of the first and second 3D images by volume rendering processing.

10. An apparatus according to claim 6, wherein the displaying unit singly displays the first 3D image or the second 3D image in place of the synthetic image in

accordance with a user instruction.

11. A 3D image processing apparatus comprising:

a storing unit configured to store data of a plurality of mask images corresponding to a plurality of projection directions associated with an object to be examined, and data of a plurality of contrast images corresponding to the plurality of projection directions associated with the object;

a subtracting unit configured to generate data of a plurality of subtraction images by subtracting the plurality of mask images from the plurality of contrast images;

a reconstruction unit configured to reconstruct first volume data from the plurality of contrast images and reconstructs second volume data from the plurality of subtraction images;

a subtracting unit configured to generate third volume data by subtracting the second volume data from the first volume data;

an image processing unit configured to generate data of a first 3D image representing a bone structure and/or a soft tissue structure from the third volume data, and generates data of a second 3D image representing a contrasted blood vessel from the second volume data;

an image synthesizing unit configured to generate data of a synthetic image by synthesizing the first 3D

image with the second 3D image; and

a displaying unit configured to display the synthetic image.

12. An apparatus according to claim 11, wherein  
5 the image synthesizing unit generates data of the synthetic image such that the second 3D image is displayed in a color different from that of the first 3D image.

13. An apparatus according to claim 11, wherein  
10 the image synthesizing unit assigns color information to the second 3D image independently of the first 3D image.

14. An apparatus according to claim 11, wherein  
15 the image processing unit generates the data of the first and second 3D images by volume rendering processing.

15. An apparatus according to claim 11, wherein  
the displaying unit singly displays the first 3D image or the second 3D image in place of the synthetic image  
20 in accordance with a user instruction.

16. A 3D image processing apparatus comprising:  
a storing unit configured to stores data of a plurality of mask images corresponding to a plurality of projection directions associated with an object to  
25 be examined, and data of a plurality of contrast images corresponding to the plurality of projection directions associated with the object;

a processing unit configured to generate first volume data representing structures of a bone and soft tissue and second volume data representing a structure of a contrasted blood vessel on the basis of the data  
5 of the plurality of contrast images and the data of the plurality of mask images;

an image processing unit configured to generate data of a first 3D image representing a bone structure and/or a soft tissue structure from the first volume  
10 data, and generates data of a second 3D image representing a contrasted blood vessel from the second volume data;

an image synthesizing unit configured to generate data of a synthetic image by synthesizing the first 3D  
15 image with the second 3D image; and

a displaying unit configured to display the synthetic image.

17. An apparatus according to claim 16, wherein the image synthesizing unit generates data of the  
20 synthetic image such that the second 3D image is displayed in a color different from that of the first 3D image.

18. An apparatus according to claim 16, wherein the image synthesizing unit assigns color information  
25 to the second 3D image independently of the first 3D image.

19. An apparatus according to claim 16, wherein

the image processing unit generates the data of the first and second 3D images by volume rendering processing.

20. An apparatus according to claim 16, wherein  
5 the displaying unit singly displays the first 3D image or the second 3D image in place of the synthetic image in accordance with a user instruction.